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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/521,031	01/12/2005	Robert H Murphy	20020001-US	6558
22590	7590	10/27/2009		
BAE SYSTEMS PO BOX 868 NASHUA, NH 03061-0868			EXAMINER NGUYEN, LUONG TRUNG	
			ART UNIT 2622	PAPER NUMBER
			MAIL DATE 10/27/2009	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/521,031

**Applicant(s)**

MURPHY ET AL.

**Examiner**

LUONG T. NGUYEN

**Art Unit**

2622

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 October 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-4, 8-13, 15, 16, 21 and 22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 8-13, 15, 16, 21 and 22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(c), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(c) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/14/2009 has been entered.

***Response to Arguments***

2. Applicant's arguments with respect to claims 1-4, 8-13, 15-16, 21-22 filed on 09/17/2009 have been considered but are moot in view of the new ground(s) of rejection.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-4, 8-13, 15-16, 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lindgren et al. US (5,420,421) in view of Bakhle et al. (US 6,061,092).

Regarding claim 1, Lindgren et al. discloses an imaging system comprising:

a thermal imaging based system (infrared imaging device 10, figure 1, see abstract, column 4, lines 12-26) adapted for imaging infra-red radiation that is emitted by a black body, the thermal imaging based system comprising:

focal plane array (FPA) having a plurality of pixels sensitive to infra-red radiation (focal plane array 16, figure 1, column 3, lines 30-47; column 4, lines 12-26);

a lens (optical system 12, figure 1, column 3, lines 30-47) disposed between the black body and the FPA and adapted to focus the infra-red radiation emitted by the black body in front of the lens onto the FPA behind the lens, the plurality of pixels of the FPA having sufficient infra-red sensitivity so as to detect the infra-red radiation;

a signal processing module (electronics unit 18, figure 1, column 3, lines 40-53) operatively coupled to the FPA.

Lindgren et al. fails to specifically disclose a shutter located between the thermal imaging based system and the black body, the shutter having a closed state and an open state wherein the closed state prevents the infra-red radiation emitted by the black body from entering the thermal imaging based system, and allows internal radiant flux of the thermal imaging based system to reach the plurality of pixels of the FPA as a reference image signal, and the open state allows an open state image signal that includes both the infra-red radiation emitted by the black body and the internal radiant flux of the thermal imaging based system to reach the plurality of pixels of the FPA; and a signal processing module operatively coupled to the FPA, and adapted to correct the open state image signal based on the reference image signal.

However, Bakhle et al. discloses a digital camera system 10, the digital camera 10 comprises a shutter (shutter 12, figures 1A-1B, column 1, line 50 – column 2, line 13; the shutter

12 is located between the CMOS image sensor array 18 and a scene in front of lens 16), the shutter having a closed state and an open state wherein the closed state prevents the radiation from the scene from entering the system, and allows internal radiant flux of the imaging system to reach detectors of the FPA as a reference image signal and the open state that allows an open state image signal that includes the radiation from the scene and the internal radiant flux of the system to enter the system and reach detectors of the FPA; a signal processing module (dark image subtraction unit 22, figures 1A-1B, column 1, line 50 – column 2, line 13) operatively coupled to the FPA, and adapted to correct the open state image signal based on the reference image signal.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device in Lindgren et al. by the teaching of Bakhle et al. in order to provide non-uniformity compensation for infrared focal plane array response over a wide dynamic range of signal flux levels of infrared radiation, such as a “cold” sky and “hot” terrain (column 2, lines 55-59).

Regarding claim 2, Bakhle et al. discloses a shutter controller (solenoid 14, figures 1A-1B) operatively coupled to the shutter, and adapted to command the shutter to its opened and closed states.

Regarding claim 3, Bakhle et al. discloses a system controller communicatively coupled to the shutter controller and the signal processing module, and adapted to control operation of the imaging system (a system controller is included in digital camera 10 to control operation of

digital camera 10, figures 1A-1B).

Regarding claim 4, Bakhle et al. discloses the system controller is communicatively coupled to a network thereby enabling the imaging system to communicate with other systems also communicatively coupled to the network (Bakhle et al. discloses video camera is coupled to a personal computer through a bus interface, column 2, lines 15-28).

Regarding claim 8, Bakhle et al. discloses wherein for any one session of imaging system operation, each of a plurality of open state image signals are corrected for pixel-to-pixel non-uniformities and offset based on the open and closed state image signal (column 1, line 50 – column 2, line 28).

Regarding claim 9, Bakhle et al. discloses wherein the closed state image signal is periodically generated to account for changes in the imaging system (column 7, lines 19-28).

Regarding claim 10, claim 10 is a method claim of apparatus claim 1; therefore, see examiner's comment regarding claim 1.

Regarding claim 11, Bakhle et al. discloses wherein correcting the open state image signal includes compensating for pixel-to-pixel non-uniformities of the FPA (column 1, line 50 – column 2, line 13).

Regarding claim 12, Bakhle et al. discloses wherein correcting the open state image signal includes compensating for offsets between the opened and closed states of the shutter (column 1, line 50 – column 2, line 13).

Regarding claim 13, Bakhle et al. discloses wherein correcting the open state image signal includes compensating for pixel-to-pixel non-uniformities and offsets between the opened and closed states of the shutter (column 1, line 50 – column 2, line 13).

Regarding claims 15-16, all the limitation of claims 15-16 are included in claim 1; therefore, see examiner's comment regarding claim 1.

Regarding claim 21, see examiner's comment regarding claim 2.

Regarding claim 22, see examiner's comment regarding claim 3.

### ***Conclusion***

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to LUONG T. NGUYEN whose telephone number is (571) 272-7315. The examiner can normally be reached on 7:30AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, DAVID L. OMETZ can be reached on (571) 272-7593. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/LUONG T NGUYEN/  
Examiner, Art Unit 2622  
10/23/09